**Jukka OH6LI @ OH0V:**

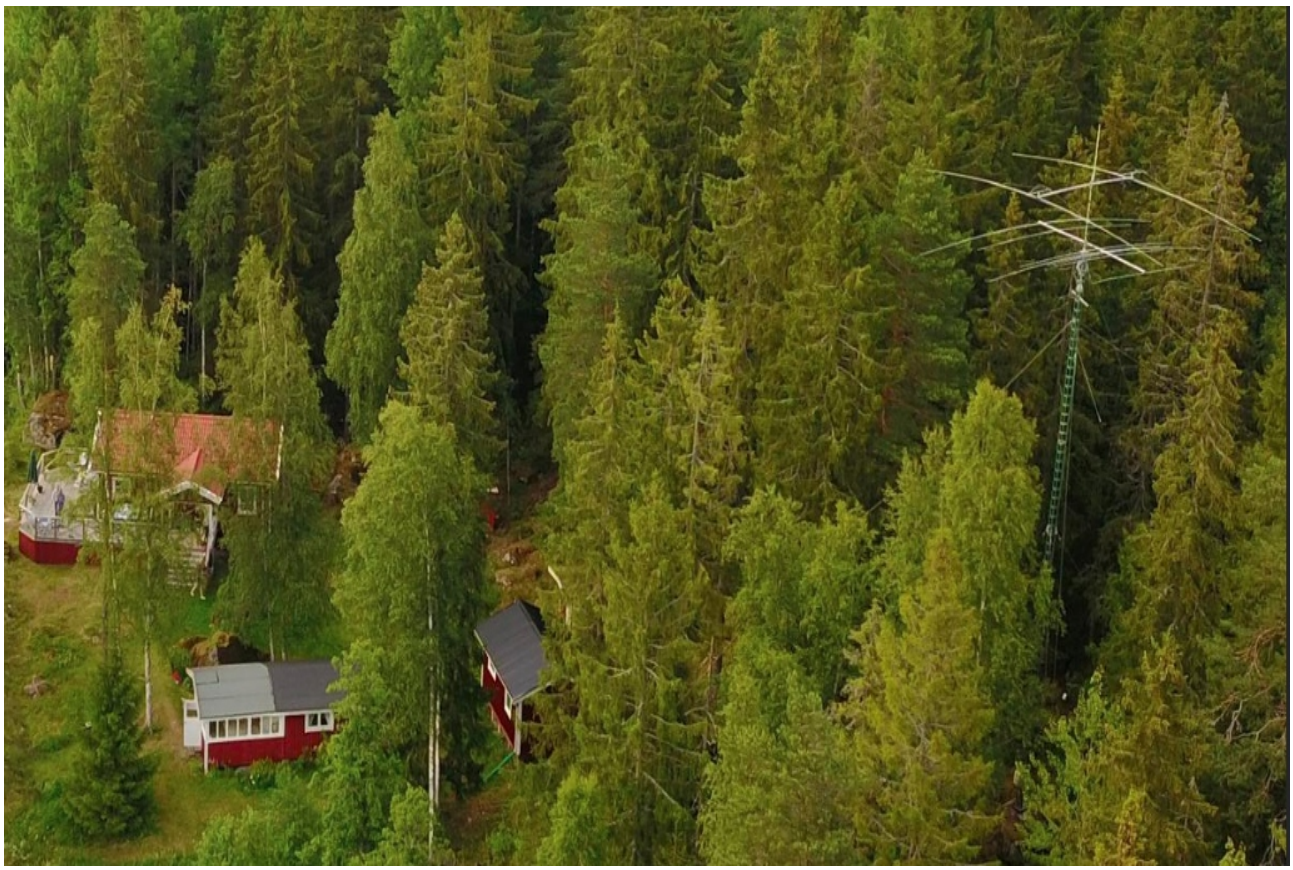
# SAC 2021 SSB – Runner Up Analysis

**SAC 2021 SSB was just another contest. This time the contest results were different as a so-called small station got silver while the winner was a big station.**

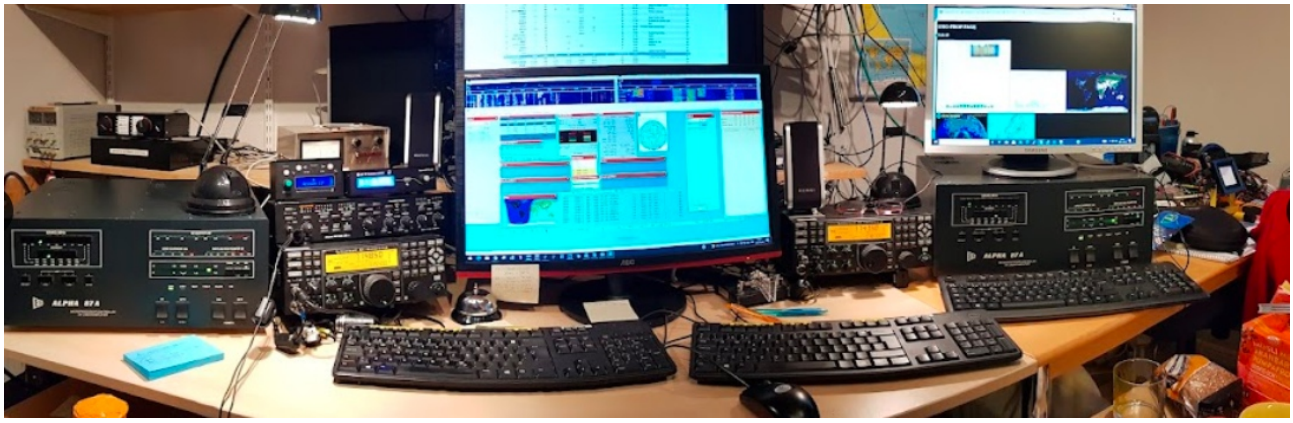
The runner-up was SE5E, Ingo. Ingo operated at his single tower station in a rural area, North from Stockholm.

Equipment comparison tells SE5E has one tower, 20 m tall. Antennas are one tri-bander and a shorty 40 m plus a 80 m GP while OH0V has several rotating towers and a variety of antennas on all five SAC bands.

**SE5E (SM5AJV)**
**10/15/20: C3@19m**
**40: EF240 @21m**
**80: GP + dipole**
**Antenna cables RG213**
**2 x K3**
**2x Alpha87**



SE5E station in Morgongåva, 100km North of Stockholm.



A panoramic picture of SE5E station. One mouse and one display. One computer following propagation. Two of everything else – keyboards, radios, filters, amplifiers and so on.

**The question:**

**How a station this kind could do so well in SAC? Ingo, SE5E, won silver.**

That is a question beyond the hardware gathered at Ingo's station. There must be something that does not meet the eye. In this article I try to find some secrets from Ingo's log, if there would be anything revealing his secret key performance indicators

**Contest begins**

The first 20 QSOs of SE5E and OH0V:

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14210 | PH | 1200 | SE5E | 59 | 1 | PD1DCV | 59 | 1 | | 14196 | PH | 1201 | OH0V | 59 | 1 | W8SSB | 59 | 1 |
| 14210 | PH | 1200 | SE5E | 59 | 2 | M6EAM | 59 | 1 | | 14196 | PH | 1201 | OH0V | 59 | 2 | PD4RL | 59 | 1 |
| 14210 | PH | 1200 | SE5E | 59 | 3 | 2M0YTN | 59 | 1 | | 14196 | PH | 1201 | OH0V | 59 | 3 | RZ3Z | 59 | 2 |
| 14210 | PH | 1201 | SE5E | 59 | 4 | F4IUT | 59 | 3 | | 14196 | PH | 1202 | OH0V | 59 | 4 | IK3MUL | 59 | 1 |
| 14210 | PH | 1201 | SE5E | 59 | 5 | MW7IHR | 59 | 1 | | 14196 | PH | 1202 | OH0V | 59 | 5 | DG6SA | 59 | 2 |
| 14210 | PH | 1201 | SE5E | 59 | 6 | HA3DX | 59 | 2 | | 14196 | PH | 1202 | OH0V | 59 | 6 | UA9CUA | 59 | 3 |
| 21219 | PH | 1203 | SE5E | 59 | 7 | EA8/OG60 | 59 | 3 | | 14196 | PH | 1203 | OH0V | 59 | 7 | DL3OX | 59 | 1 |
| 14210 | PH | 1203 | SE5E | 59 | 8 | WX4G | 59 | 2 | | 14196 | PH | 1203 | OH0V | 59 | 8 | HA3DX | 59 | 4 |
| 14210 | PH | 1204 | SE5E | 59 | 9 | PD7CJT | 59 | 3 | | 14196 | PH | 1203 | OH0V | 59 | 9 | 2E0SPS | 59 | 1 |
| 21219 | PH | 1205 | SE5E | 59 | 10 | PJ4DX | 59 | 5 | | 14196 | PH | 1203 | OH0V | 59 | 10 | KC9YDV | 59 | 1 |
| 14210 | PH | 1206 | SE5E | 59 | 11 | G3TVN | 59 | 1 | | 14196 | PH | 1204 | OH0V | 59 | 11 | 2E0WSE | 59 | 1 |
| 14210 | PH | 1207 | SE5E | 59 | 12 | IU5LAW | 59 | 1 | | 14196 | PH | 1204 | OH0V | 59 | 12 | K4YFR | 59 | 1 |
| 21219 | PH | 1207 | SE5E | 59 | 13 | UN6LN | 59 | 6 | | 14196 | PH | 1204 | OH0V | 59 | 13 | IX1HPN | 59 | 4 |
| 14210 | PH | 1207 | SE5E | 59 | 14 | EA3HJO | 59 | 7 | | 14196 | PH | 1205 | OH0V | 59 | 14 | RW9XU | 59 | 1 |
| 14210 | PH | 1207 | SE5E | 59 | 15 | N1RR | 59 | 13 | | 14196 | PH | 1205 | OH0V | 59 | 15 | N7ZZ | 59 | 3 |
| 14210 | PH | 1208 | SE5E | 59 | 16 | G9P | 59 | 4 | | 14196 | PH | 1205 | OH0V | 59 | 16 | KF7RO | 59 | 2 |
| 21219 | PH | 1208 | SE5E | 59 | 17 | YL7X | 59 | 6 | | 14196 | PH | 1206 | OH0V | 59 | 17 | N1RR | 59 | 10 |
| 14210 | PH | 1208 | SE5E | 59 | 18 | KK6BT | 59 | 4 | | 14196 | PH | 1206 | OH0V | 59 | 18 | ON5GM | 59 | 5 |
| 21219 | PH | 1209 | SE5E | 59 | 19 | EA8DED | 59 | 11 | | 14196 | PH | 1206 | OH0V | 59 | 19 | WX4G | 59 | 5 |
| 14210 | PH | 1209 | SE5E | 59 | 20 | 2E0XPR | 59 | 11 | | 14196 | PH | 1206 | OH0V | 59 | 20 | RW1CW | 59 | 2 |

Ingo is on both - 20 and 15 m - at the same time while OH0V runs on 20. From one point of view, the result is SE5E wins the first 20 QSOs as he gathers more multipliers, being on two bands. SE5E sure gets valuable 15 m DX QSOs.

In this analysis we bypass clear hardware related issues, like OH0V gets the 20 QSOs in less time than SE5E because of OH0V is a considerably bigger station, QSO rate by sheer effective radiated power is more a matter of hardware.

Analysis focuses on what did he do and when. Breaks, band changes and other possible events creating the score good for 2nd place. Is there anything special SE5E did to achieve the better score?

The first incident shows the fact SE5E concentrates his operation. A perfect example is time slot 1340-1349 when SE5E runs on 20 and 15 and OH0V is trying QSOs on 10 – with no real success.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14210 | PH | 1340 | SE5E | 59 | 213 | DF6JC | 59 | 5 | | 21285 | PH | 1340 | OH0V | 59 | 264 | KD2UHF/C | 59 | 1 | |
| 14210 | PH | 1340 | SE5E | 59 | 214 | EO5OFF | 59 | 134 | | 21285 | PH | 1340 | OH0V | 59 | 265 | KD2UHD | 59 | 2 | |
| 14210 | PH | 1340 | SE5E | 59 | 215 | AD2BO | 59 | 4 | | 21285 | PH | 1340 | OH0V | 59 | 266 | W4DTA | 59 | 2 | |
| 21206 | PH | 1341 | SE5E | 59 | 216 | KA5PNX | 59 | 1 | | 21285 | PH | 1340 | OH0V | 59 | 267 | M0ILT | 59 | 1 | |
| 14210 | PH | 1341 | SE5E | 59 | 217 | W2OAB | 59 | 7 | | 21285 | PH | 1341 | OH0V | 59 | 268 | NW1Q | 59 | 15 | |
| 14210 | PH | 1342 | SE5E | 59 | 218 | F5OHM | 59 | 122 | | 21285 | PH | 1341 | OH0V | 59 | 269 | VE2LEZ | 59 | 1 | |
| 14210 | PH | 1342 | SE5E | 59 | 219 | M7DKA | 59 | 32 | | 21285 | PH | 1341 | OH0V | 59 | 270 | ES3TI | 59 | 19 | |
| 21206 | PH | 1343 | SE5E | 59 | 220 | TA3OER | 59 | 22 | | 21285 | PH | 1342 | OH0V | 59 | 271 | F4IEX | 59 | 19 | |
| 14210 | PH | 1343 | SE5E | 59 | 221 | W8YF | 59 | 2 | | 21285 | PH | 1342 | OH0V | 59 | 272 | N9ZYL | 59 | 1 | |
| 21206 | PH | 1344 | SE5E | 59 | 222 | K1YWW | 59 | 2 | | 21285 | PH | 1342 | OH0V | 59 | 273 | VY2GF | 55 | 4 | |
| 14210 | PH | 1344 | SE5E | 59 | 223 | IK2LOL | 59 | 37 | | 21285 | PH | 1342 | OH0V | 59 | 274 | 5B4WN | 59 | 41 | |
| 21206 | PH | 1345 | SE5E | 59 | 224 | AD2BO | 59 | 5 | | **28498** | PH | 1343 | OH0V | 59 | 206 | ES3TI | 59 | 20 | |
| 21206 | PH | 1345 | SE5E | 59 | 225 | W1GD | 59 | 33 | | 21285 | PH | 1345 | OH0V | 59 | 275 | AH2O | 59 | 1 | |
| 14210 | PH | 1346 | SE5E | 59 | 226 | WA1S | 59 | 5 | | 21285 | PH | 1345 | OH0V | 59 | 276 | CE2SQE | 59 | 1 | |
| 21206 | PH | 1346 | SE5E | 59 | 227 | SV6NNZ | 59 | 15 | | 21285 | PH | 1346 | OH0V | 59 | 277 | WB6QQU | 59 | 3 | |
| 14210 | PH | 1346 | SE5E | 59 | 228 | DL/YL3GX | 59 | 17 | | 21285 | PH | 1346 | OH0V | 59 | 278 | N5TJ | 59 | 4 | |
| 21206 | PH | 1347 | SE5E | 59 | 229 | N4RV | 59 | 14 | | 21285 | PH | 1347 | OH0V | 59 | 279 | K8ZT | 59 | 9 | |
| 21206 | PH | 1347 | SE5E | 59 | 230 | N7ZZ | 59 | 34 | | 21285 | PH | 1347 | OH0V | 59 | 280 | GW4BKG | 59 | 40 | |
| 14210 | PH | 1347 | SE5E | 59 | 231 | M0XCZ | 59 | 4 | | 21285 | PH | 1347 | OH0V | 59 | 281 | KV4UL | 59 | 2 | |
| 21206 | PH | 1347 | SE5E | 59 | 232 | KZ2I | 59 | 70 | | 21285 | PH | 1347 | OH0V | 59 | 282 | K9DTC | 59 | 3 | |
| 21206 | PH | 1348 | SE5E | 59 | 233 | G0SYF | 59 | 212 | | 21285 | PH | 1348 | OH0V | 59 | 283 | EB3AKL | 59 | 6 | |
| 14210 | PH | 1348 | SE5E | 59 | 234 | GM0VMV | 59 | 17 | | 21285 | PH | 1349 | OH0V | 59 | 284 | W0GNZ | 59 | 163 | |
| 14210 | PH | 1348 | SE5E | 59 | 235 | G4OBB | 59 | 30 | | 21285 | PH | 1349 | OH0V | 59 | 285 | KI4DNO | 59 | 1 | |
| 21206 | PH | 1349 | SE5E | 59 | 236 | N2XNB | 59 | 6 | | | | | | | | | | | |
| 14210 | PH | 1349 | SE5E | 59 | 237 | VK5PAS | 59 | 1 | | | | | | | | | | | |
| 21206 | PH | 1349 | SE5E | 59 | 238 | K9NW | 59 | 36 | | | | | | | | | | | |

SE5E wins this ten minute period over OH0V as OH0V distracts to ten meters without a real success. ES3TI was very kind to move to ten, but OH0V did not get any other ten meter QSOs whereas SE5E showed a solid score building performance on 15 + 20 run combo.

**The first break**

SE5E has his first break at 1510-1515 UTC without losing his run frequency:

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14210 | PH | 1510 | SE5E | 59 | 394 | DC8VD | 59 | 3 | | ( | 21288 | PH | 1510 | OH0V | 59 | 506 | PY5AMF | 59 | 57 |
| 21206 | PH | 1510 | SE5E | 59 | 395 | WA5LFD | 59 | 7 | BREAK | ( | 21288 | PH | 1510 | OH0V | 59 | 507 | TA3DE | 59 | 12 |
| 21206 | PH | 1515 | SE5E | 59 | 396 | KP2/SM4K | 59 | 9 | | ( | 21288 | PH | 1510 | OH0V | 59 | 508 | WA9YKR | 59 | 1 |
| 14210 | PH | 1516 | SE5E | 59 | 397 | KP2/SM4K | 59 | 10 | | ( | 21288 | PH | 1511 | OH0V | 59 | 509 | KC9BG | 59 | 1 |

OH0V pauses his operating 1523–1528 UTC. Short, nearly simutaneous breaks for both stations.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14210 | PH | 1520 | SE5E | 59 | 401 | K8ZT | 59 | 16 | | ( | 21288 | PH | 1520 | OH0V | 59 | 530 | WX4ZZ | 59 | 7 | |
| 14210 | PH | 1520 | SE5E | 59 | 402 | F5TAB | 59 | 14 | | ( | **7081** | PH | 1523 | OH0V | 59 | 531 | OK2MBP | 59 | 77 | 40m + BREAK |
| 14210 | PH | 1521 | SE5E | 59 | 403 | PV2K | 59 | 83 | | ( | 7162 | PH | 1528 | OH0V | 59 | 532 | RW3AI | 59 | 26 | |

In addition, OH0V tries 40m but it is too early and OH0V returns to 20+15.

**40m**

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14210 | PH | 1545 | SE5E | 59 | 435 | VE3AT | 59 | 14 | | ( | 21288 | PH | 1543 | OH0V | 59 | 566 | W4QNW | 59 | 2 |
| 14210 | PH | 1545 | SE5E | 59 | 436 | NW1Q | 59 | 30 | | ( | 21288 | PH | 1544 | OH0V | 59 | 567 | N0AV | 59 | 1 |
| 7157 | PH | 1545 | SE5E | 59 | 437 | LY5XX | 59 | 80 | 40m | ( | 21288 | PH | 1544 | OH0V | 59 | 568 | KD2OJQ | 59 | 135 |
| 7157 | PH | 1545 | SE5E | 59 | 438 | G3R | 59 | 80 | | ( | 21288 | PH | 1544 | OH0V | 59 | 569 | VE9GX | 59 | 21 |
| 14210 | PH | 1546 | SE5E | 59 | 439 | VA3DXA | 59 | 80 | | ( | 21288 | PH | 1544 | OH0V | 59 | 570 | G4DBL | 59 | 8 |
| 7157 | PH | 1546 | SE5E | 59 | 440 | F6DRP | 59 | 105 | | ( | 21288 | PH | 1545 | OH0V | 59 | 571 | WA4AH | 59 | 2 |
| 14210 | PH | 1547 | SE5E | 59 | 441 | F4EZK | 59 | 8 | | ( | 21288 | PH | 1545 | OH0V | 59 | 572 | NF9Z | 59 | 6 |
| 14210 | PH | 1547 | SE5E | 59 | 442 | W1JIM | 59 | 4 | | ( | 21288 | PH | 1545 | OH0V | 59 | 573 | KD2FWG | 59 | 5 |
| 7157 | PH | 1547 | SE5E | 59 | 443 | SQ5DTL | 59 | 36 | | ( | 21288 | PH | 1546 | OH0V | 59 | 574 | F1IEH | 59 | 1 |

SE5E goes to 40m successfully at 1545, followed by OH0V at 1551

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14210 | PH | 1550 | SE5E | 59 | 447 | KF2GV | 59 | 4 | | ( | 21288 | PH | 1551 | OH0V | 59 | 581 | WN3DX | 59 | 8 | |
| 7157 | PH | 1550 | SE5E | 59 | 448 | II2PHL | 59 | 4 | | ( | **7156** | PH | 1551 | OH0V | 59 | 582 | SP9AB | 59 | 6 | 40m |
| 14210 | PH | 1550 | SE5E | 59 | 449 | 2E0LSB | 59 | 2 | | ( | 21288 | PH | 1551 | OH0V | 59 | 583 | W3DA | 59 | 1 | |
| 14210 | PH | 1550 | SE5E | 59 | 450 | ON6EF | 59 | 14 | | ( | 7156 | PH | 1552 | OH0V | 59 | 584 | OE5TXF | 59 | 76 | |
| 7157 | PH | 1550 | SE5E | 59 | 451 | RW3AI | 59 | 35 | | ( | 7156 | PH | 1552 | OH0V | 59 | 585 | DL7USW/P | 59 | 12 | |
| 14210 | PH | 1551 | SE5E | 59 | 452 | IU5HES | 59 | 43 | | ( | 21288 | PH | 1552 | OH0V | 59 | 586 | WA2CZR | 59 | 2 | |
| 7157 | PH | 1552 | SE5E | 59 | 453 | LY5GT | 59 | 22 | | ( | 7156 | PH | 1553 | OH0V | 59 | 587 | DF8HS | 59 | 14 | |
| 7157 | PH | 1552 | SE5E | 59 | 454 | OK1OA | 59 | 37 | | ( | 7156 | PH | 1553 | OH0V | 59 | 588 | DL3SWS | 59 | 14 | |
| 7157 | PH | 1552 | SE5E | 59 | 455 | OE5TXF | 59 | 77 | | ( | 21288 | PH | 1554 | OH0V | 59 | 589 | W5PDL | 59 | 1 | |

Going to 40m, SE5E has practically the same schedule i.e. there is no difference in band change timing.

Note a detail, SE5E is on 7157 and OH0V is on 7156. One kilohertz separation and both are running successfully. Both stations must have clean signals

OH0V takes a break at 1639-1646 while SE5E keeps on running on 20 + 40. SE5E is really doing his best to create a good score.

OH0V takes another break 1709–1722 to have a meal. SE5E continues running 20 + 40 m.

**Going to 80m**

SE5E takes the initiative and goes to 80 at 1731. OH0V follows 1741. Again, the band change scheduling match very well for these two stations.

- SE5E takes a break at 1752 – 1758.
- SE5E takes another break at 1807 – 1811.
- OH0V takes a break 2040 – 2055 for a microwave oven meal.
- SE5E takes his first longer break at 2107 – 2120 UTC. The amount of breaks starts to even out.
- A nearly simultaneous break happens 2145 – 2154.
- Synchronization seems to be next to magic.

**Night time hours**

After 2200 UTC the QSO rates drop for both stations. After a number of breaks OH0V goes first to sleep at 2244 UTC. SE5E takes some breaks, finally surrendering at 2356 for a 3,5 hour sleep. OH0V sleep period is 2244 – 0302 UTC, a real four hour retirement.

The rates stay low, thus OH0V sleeps from 0336 – 0412 for a half hour nap. SE5E takes shorter five to ten minute breaks every now and then, trying to max out the QSO count while sleep deprivation affects operating.

OH0V sleeps again from 0500-0535 UTC. Meanwhile SE5E gets only 10 QSOs.

The QSO rates rise with the Sun.

**Sunday morning**

Next the competitors move upwards starting by stopping CQing on 80. OH0V last QSO on 80 is at 0445 UTC where SE5E pushes until 0538.

The first 20m QSOs take place at 0546 for SE5E and 0541 for OH0V. Amazingly small difference. SE5E uses two radios non-stop.

20 m opens well for OH0V but SE5E is taking breaks until 0611 when SE5E joins running on 20 m. SE5E potentially lost some QSOs during this 30 minute period 0541-0611.

SE5E did rest much less during the slowest hours, affecting performance in the later morning hours that could produce more contacts.

**15 and 10 m**

First 15 m QSO is by OH0V at 0656 UTC and SE5E follows at 0715. A 20 minute difference is not far away from sunrise difference as SE5E sunrise is later than OH0V sunrise.

OH0V moves to 10 m at 0708 UTC and SE5E follows 0730, the same about 20 minute difference.

**Lower 20m**

CQing below 14175 is a trick only some know. SE5E goes to 14164 at 0850 UTC, followed by OH0V at 0900 UTC. It is clear both stations have a planned schedule and execute their plans to max out the score.

**Routine**

The most important routine is to scan the bands while running in the later hours of the contest. SE5E scans occasionally ten and runs the other radio on 15 or 20. Ingo collects some very nice multipliers that OH0V misses.

**Moving the multipliers**

A highlight for SE5E happens as A62A moves from 20 to give a multiplier on 15. SE5E is alert even if he is very tired in the last hour of the contest.

**Summary**

SE5E did a wonderful operation at his smaller station, achieving 2nd place in SAC 2021 SSB. There are no weak points in his operating, compared to OH0V. The score difference comes only from hardware.

Were any secrets found? Not really. SE5E uses same kind of equipment as everyone competing with a 2 radio setup.

The grounds for achieving 2nd place might come from the effort SE5E invested. Using two radios through the whole event and going far beyond typical contester's station building attention to detail. Getting a C3 really function on two bands simultaneously is not a small piece of cake.

Congratulations Ingo.